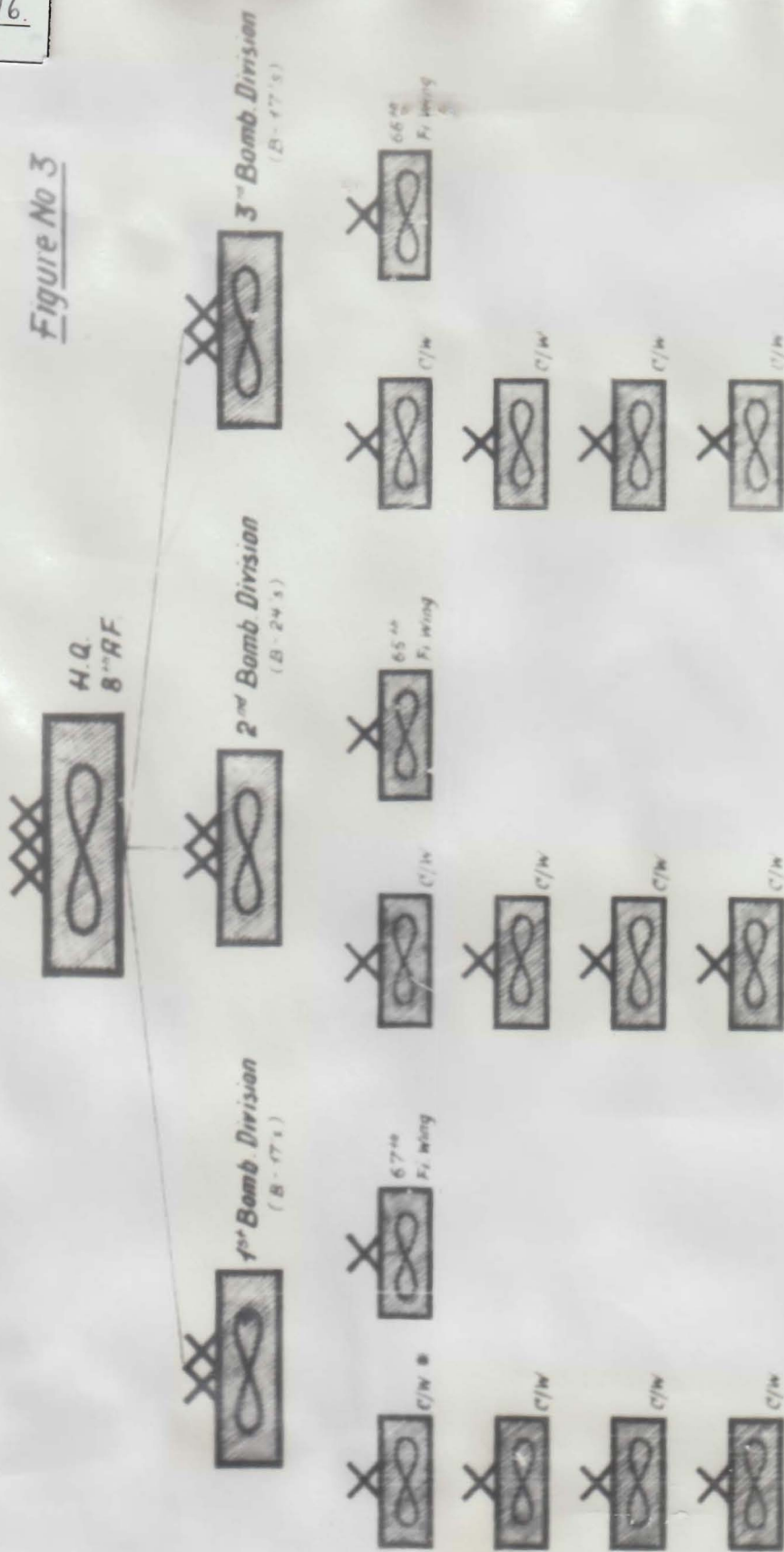


Organization and Strength of the 8th US Air Force
— As of March 1945 —

Figure No 3



Total about 3300 Bombers (B-17's and B-24's) and 1250 Fighters (P-51's and some P-47's)

* C/W = Combat Wing

TOP SECRET

available to the 8th Air Force. Energetic search of the air-to-ground and point-to-point frequencies aided in the determination of American airfields in Great Britain.

During the first missions flown by B-17's of the 8th Air Force, an extensive quantity of captured documents was taken; so the Luftwaffe SIS found it easy to monitor the traffic, and to evaluate it strategically as well as tactically.

bb) Organization.

The VIII Bomber Command was organized into three bomber divisions:

1st Bomber Division (B-17's); area north of London,
2nd Bomber Division (B-24's); Norwich area,
3rd Bomber Division (B-17's); Colchester area.

After several changes, each bomber division was subdivided into four combat wings and one fighter wing. Each combat wing had four or more bomber groups, and each bomber group had four bomber squadrons. The strength of the bomber groups was assumed to be about 80 aircraft. The composition of the divisions, wings and groups and occupation and changes in occupation of airfields, were always perfectly clear to German SIS, because the considerable amount of radio traffic within VIII Bomber Command made it possible to keep abreast of the smallest details. Evaluation of the radio traffic of special units, such as that at Alconbury, was more difficult, but could be done by close cooperation between SIS and Dulag Luft. Only a rough outline of VIII Bomber Command can be given here; specialists in this field were Lt. Hennig of SIS Battalion 357 and T/Sgt. Boehm, of Referat B.

TOP SECRET

TOP SECRET

cc) Strength and Occupation of Airfields.

The actual strength of the 8th Air Force was not known to the SIS. The total number of American bombers in UK could be more readily determined from a study of the trans-Atlantic ferry traffic than from the training traffic over their airfields. The largest missions were flown in March, 1945, with the following numbers of aircraft participating:

1st Bomber Division	800	B-17's
2nd Bomber Division	600	B-24's
3rd Bomber Division	700	B-17's
Total:	2100	

Customarily, strong air attacks did not exceed 1400 participating aircraft. Striking it was that each group usually employed a third of its total strength only in any one raid in order, it would appear, to attack each day. These tactics permitted daily raids over a long period by 900 - 1200 bombers.

Special training units, corresponding to the OTU's of the RAF, were not known. Only a replacement center could be observed at each bomber division. So in UK only front-line crews were stationed.

The 1st Bomber Division, the crews of which comprised the oldest in UK, maintained the best radio discipline. The gaps in the VHF radio picture of this division may be explained by the fact that the reach of the German receivers and D/F's was too limited to cover the divisions' operational area. This circumstance rendered more difficult advance warning of raids by this division.

TOP SECRET

TOP SECRET

The 2nd Division probably had received its cadres from the 15th Air Force. It was the 2nd Division that started the shuttle flights between England, Poltava in Russia, and southern Italy. These shuttle flights were highly appreciated by Luftwaffe SIS personnel, since their traffic proved to be especially abundant. Besides, the aircraft did not change their call-signs so that they could easily be followed throughout the entire route. So, in addition to an accurate strength report always available, even late-returning aircraft could be identified.

Both the W/T and R/T traffic of the 3rd Bomber Division were the most voluminous and least camouflaged. Often it appeared that this division especially, deliberately renounced all restrictions and precautions making for signal security. For example, during raids they almost invariably reported, in crossing control points, their estimated time of arrival over targets, thus assisting German SIS to estimate prospective targets and furnish appropriate advance warnings.

Inexperienced crews could be recognized immediately by the frequent guidance given them by formation leaders during missions, by their incessant training flights over England, and by their clumsy use of the bomber code.

dd) Operations.

In contrast to the RAF, the 8th Air Force was forced to engage in radio traffic immediately after the take-off. Therefore, without resorting to cunning methods, the Luftwaffe SIS was enabled to acquire early knowledge of anticipated strength


TOP SECRET

TOP SECRET

of raids, as well as hints as to targets, and pass this information on to the Defense of the Reich organization.

The reasons for beginning radio traffic so early were very evident. While in the RAF each individual bomber had to navigate independently from take-off to landing, the 8th Air Force flew their missions by units. So a raid by the 8th Air Force fell into two distinct phases; the assembly, and the raid proper.

The exact sub-organization of the individual bomber divisions and combat wings, and the fixed call-signs and frequencies, facilitated the tracking of a raid extraordinarily. The monitoring of the HF R/T traffic revealed special details of the take-off. The assembly of groups and wings was followed on the combat wing frequencies, and the circumstance that the call-signs never changed proved especially helpful. The beginning of the assembly of the divisions was recognized, on one hand, by the clear text of the messages, and, on the other, because the combat wing leaders used, from that time on, only the A-frequency, i.e. the frequency of the division.

On W/T the following was observed: first preparations over the day before a raid (concentration of aircraft on specific airfields, etc); and, secondly, the weather reconnaissance over the assembly area, and later over the prospective route and target areas. After the take-off, during the time of assembly of the wings, some aircraft (presumably formation-leaders) of the 2nd and 3rd Bomber Divisions exchanged tuning traffic with

TOP SECRET

TOP SECRET

their headquarters, using their full operational call-signs. In this way it could immediately be decided whether the operation was merely a training flight or a raid. With the 1st Bomber Division such tuning traffic was never heard. However, some aircraft tuned their radio transmitters to the zero beat of the headquarters' transmitter.

The assembly of the divisions invariably terminated with the order: "Check VHF". The assembly completed, each combat wing-leader had to transmit a message concerning the control points to the headquarters of the division. This message was transmitted in both W/T and R/T. If the raids were large ones, certain combat wing-leaders sent these messages to the headquarters of their respective wings on the wing frequencies in order to avoid overloading of the division channel. In W/T these messages were sent by the 1st and 3rd Divisions in the bomber code, by the 2nd Division in clear text. As it was the duty of each combat wing-leader to transmit these messages, it was possible for the SIS very shortly after the assembly of the divisions, to give the position, precise strength, the order of flight, and the length of the bomber stream.

The introduction of the so-called Scouting Force, weather reconnaissance aircraft, that preceded the mission, aided the SIS to determine the course and target of the bombers hours in advance. Therefore, this Scouting Force was monitored by especially skilled D/F operators so that its aircraft could be immediately D/F'ed as they sent their weather reports from positions over the control points. It is interesting to state

TOP SECRET

TOP SECRET

in this connection that, together with a knowledge of the flak zones avoided by the bombers, two or three VHF D/F's only were sufficient, during the last weeks of the war, to predetermine the course and depth of the bomber stream exactly. The tracking of the bombers was made possible by current D/F-ing of the R/T traffic (VHF), the W/T traffic (HF), as well as airborne radar (H2X), through the corresponding three D/F organizations the SIS had developed.

Besides the early reports of the Scouting Force of the weather over the targets, the switching of the "GH" equipment was a valuable clue to the determination of the depth of the raid. The control point messages proved another aid to determination of the depth of the bomber raid. They contained, in addition to weather and visibility reports, data on the expected time of arrival over the next control point. The 3rd Bomber Division, in order to complete the picture, gave even estimated time of arrival over the target.

Orders for cancellation of missions had to be receipted for by each formation leader. Usually the formation leaders asked for authentication before executing the order, thereby eliminating any chance of deceptive orders being conveyed by German transmitters.

A breaking-off of operations on the initiative of formation-leaders reflected itself especially well in the traffic. It happened several times that divisions that had already crossed the Belgium-Dutch coast met bad weather. The combat wings lost contact with each other. The separate wing commanders

TOP SECRET

TOP SECRET

strived to hold their formations together while the Scouting Force flew to and fro along the weather front seeking an opening through which the bomber stream could pass. The German radar service was unable to account for this retarding of the bomber stream. The SIS however could always, and without the slightest difficulty, inform the German Command of the cause of the halt and could answer the question whether the raid would continue, part of the formation turn back home, or the entire mission be cancelled.

An especially conspicuous example should be mentioned, bearing upon the comparative accuracy of information furnished by the SIS and the radar reporting service. In the beginning of 1944 the three bomber divisions met a bad weather front over Belgium-Western Germany, so broke-off the mission and returned home in a very wide-spread formation. The radar reporting service, however, continued to track the fighter cover, and, later, even German fighters that had set out to intercept the bombers, as four-engined aircraft, maintaining the while that the bomber formation was headed for Pilsen in Czecho-Slovakia.

The Scouting Force, which accompanied the single divisions, came to assume increasingly the function of "masters of ceremonies". They reported weather conditions over targets regularly to the combat wings to which they belonged, and decided whether the bombing was to be done by instrument or visually. As the target was approached the formation tightened for the bomb run. The formation leaders alerted the formation

TOP SECRET

TOP SECRET

preparatory to the command, "Bombs-Away". Then came the order, "Rainy-Day", bomb bays opened, and finally, "Bombs-Away", was given either in the clear or by a cover phrase. After the bombing the formation leaders transmitted their reports. Often these reports were rendered also by reconnaissance aircraft whose mission it was to observe bombing effects. Each of these reports contained information as to:

Which of the pre-selected targets had been bombed;
 Kind of bombing (by instruments or visual);
 Success of the attack;
 Exact time of bombing.

Similar to the RAF, the returning groups received weather reports from their airfields while homing (air pressure, ceiling, and visibility, over the airfield).

SIS evaluation of an American raid was the same as for those of the RAF. The radio traffic of the individual bombers, especially on the return, was, as compared to the RAF, far more extensive. While during a night raid of the RAF Bomber Command five percent only of the mass of raiding aircraft could be heard, in the case of a day raid by the 8th Air Force, even when navigation was facilitated by good weather conditions, thirty-five to forty percent of all aircraft participating in the raid could be listened to on W/T. The total strength of a group was easily determined through its call-signs, as the number of airborne aircraft in a "box" was always the same.

c) VIII Fighter Command.

aa) Organization.

The Fighter Command at first comprised four, later three wings:

TOP SECRET

TOP SECRET

65th Fighter Wing;
66th Fighter Wing;
67th Fighter Wing;
70th Fighter Wing (100th Wing)

The basis for this information, in addition to the ground networks, was the VHF R/T, which gave more intelligence than the British fighter R/T. The number of wings could be determined by the number of different "D" channels.

70th Wing had a special operational function. It was used much more than any other wing for ground attack. Close liaison with Flug Luft revealed that this wing was part of 9th Air Force and had been detached to VIII Fighter Command. Prisoners of war referred to it both as 70th Wing and as 100th Wing. This wing was watched especially closely, as it was known that the 9th Air Force was intended to support U.S. ground forces in the invasion. The return of this wing to 9th Air Force, could be taken as a sure sign of impending invasion. Actually, shortly before the invasion, it was transferred to XIX TAC. The dissolution of VIII Fighter Command in the beginning of 1945 was deduced from point-to-point networks, and the following transfers of units established:

65th Wing to the 3rd Bomber Division;
66th Wing to the 1st Bomber Division;
67th Wing to the 2nd Bomber Division.

This was later confirmed by PWI and captured documents.

The task of the Luftwaffe SIS was complicated by the fact that several groups were found to be using not only three squadrons' call-signs, but, on some missions, as many as six. At the time, it was assumed that the groups had been doubled

TOP SECRET

TOP SECRET

in strength, as was the case in the VIII Bomber Command. PWI revealed that this was an erroneous conclusion, and that such supplementary call-signs were allocated to the squadrons for individual missions, to differentiate between the part of a squadron that was to fly close escort, and that part which was free to carry out sweeps.

bb) Operations.

The voluminous air-to-air R/T traffic permitted an accurate insight into the tactics of the VIII Fighter Command. If the assembly of the heavy bombers was nearly completed, the appearance of the first fighter traffic was the unvarying sign that the formations were about to start on their way, as the fighter cover only took off shortly before the bombers passed over the English coast.

Continuous D/F-ing of the fighter formations permitted valuable conclusions to be drawn as to the intended target. Whereas the bombers often flew a very circuitous route to the target in order to deceive the German defenses, the relief fighter cover, by virtue of its limited range, had to fly straight to the point at which it was to rendezvous with the bombers.

R/T gave an exact picture of the weather, German defense, losses of fighters and bombers, German losses, formation of the fighters and bombers, relief of the fighter cover, method and effectiveness of the bombing reconnaissance reports, morale of the pilots, estimate of the flak, etc.

As the German fighter arm grew weaker, it was observed that the US fighter cover formations engaged more and more in fighter

TOP SECRET

TOP SECRET

sweeps while on escort missions. Despite this, the fighter cover with the bomber formations was always strong enough to drive off even the larger formations of German fighters who came upon them by surprise.

It was interesting to note the temporary assignment of two groups of the 8th Air Force to the 9th Air Force, to help out during the Ardennes offensive in December 1944. These groups provided mostly fighter escort for medium bomber formations of the IX Bomber Command.

3. Ninth Air Force; Up Until the Organization of AEF.

a) General.

The 9th Air Force operated in the Mediterranean up until about the middle of 1943, and then it gave up its heavy bomber units to the 15th Air Force, and its mediums to the 8th Air Force. After that it was set up again in the UK as a cadre.

In the beginning the 9th Air Force in the UK consisted of:

aa) 10th Fighter Wing.

It was detached to 8th Air Force, under whose command it became operational;

bb) IX Air Support Command.

It was ascertained from practice traffic of the Air Support Parties that the VIIIth had its name changed to the IX Air Support Command. This revealed that it was now under the 9th Air Force. The IX Air Support Command had only a few reconnaissance squadrons and some signal units. Until the 9th Air Force was assigned flying units in the beginning of 1944, its

TOP SECRET

TOP SECRET

importance was very slight. The assignment of flying units took place after the 9th Air Force was incorporated into the newly formed Allied Expeditionary Air Force, and will be dealt with under section "F", the AEAF.

b) Exercises by the Air Force and Army.

The IX Air Support Command carried on numerous joint maneuvers with the ground forces, as well as command post exercises in radio communications.

Radio exercises were clearly differentiated from real maneuvers by the following:

- aa) Radio exercise messages had "x" in their headings, or the words "exercise", "dummy" or something similar;
- bb) Even without these earmarks, radio practice traffic could still be recognized as such, because the traffic did not present the same general appearance as regular traffic. There would be references to too many missions, to unlikely sounding targets, to positions too far apart, and a dearth of pertinent questions. Moreover, in contrast to real traffic, practice traffic was always interrupted for lunch at noon. It was often assumed that large-scale practice traffic was put on before the invasion for the purpose of deceiving German signal intelligence.

In the course of practice traffic there were occasional messages of importance, such as: "Lieutenant Blank of IX Air Support Command report to the CP in Middle Wallop"; also mention in the clear of unit names and locations. This traffic was therefore covered to as great extent as possible.

TOP SECRET

TOP SECRET

c) Information Gained from Coverage of the Exercises of the IXAir Support Command.

- aa) The concentration area for the Air Support parties was found to be in the Middlewallop area.
- bb) The frequency bands that the ASP's worked on had been established, which enabled this traffic to be picked up without delay when the invasion came (see diagram);
- cc) The differences between British and American tactics in air-ground cooperation were spotted;
- dd) German intercept personnel accustomed itself to American radio procedure, and thus prepared for the invasion;
- ee) Ways were established for distinguishing between British and American traffic:

AMERICAN

Railroad
CP
Recco

BRITISH

Railway
HQ
Recco

In addition, there was the use of certain Q-signals by the British only or by the Americans only. Also call-signs, "fist", characteristics, etc., were factors.

The most important results of the IX Air Support Command was, without doubt, the establishing of the fact that, up to that time, there had been only one cadre unit on hand. As long as this cadre continued not to receive its complement of flying units, the invasion need not to be reckoned with.

TOP SECRET

TOP SECRET

Example of Statistical Calculation of Frequency Bands for
Particular Traffic Networks, e.g. ASP's

Frequency Band Air Support Traffic Tac. Recce-Broadcast

over 6000 kcs.		
5500 kcs.		
5000 kcs.		
4500 kcs.		
4000 kcs.		
3500 kcs.		
3000 kcs.		
2500 kcs.		
2000 kcs.		
1500 kcs.		
1000 kcs.		

Each frequency intercepted is represented by a line.

TOP SECRET

F. Allied Expeditionary Air Force (AEAF) (See Figure 4)1. General.

For the support of the Allied ground forces in the invasion, the British had 2nd TAF, and the Americans had 9th Air Force which, up to that time, had been a cadre organization with no fighter units. As yet there was no higher echelon of command which would guarantee smooth cooperation between the two air forces. Thus, the German SIS was ordered to be on the watch for the creation of such an organization. The formation of AEAF in the beginning of 1944 was expected by the Germans, and came as no surprise.

From a general survey of the radio traffic it could be noted that the close-support combat units for the invasion had been combined into a single organization. The fact that the Ninth Air Force changed from special or Army call-signs to TAF call-signs was a clear indication of this.

From this day, the analysis of AEAF radio traffic was notably simple for every station of AEAF could be immediately identified by its call-sign. This was true, also, for air-to-ground traffic, as in the case of IX Bomber Command, IX Troop Carrier Command, etc.

Without any captured documents, with only very few PW reports (most PW's had no information on this themselves), the organization was reconstructed merely from traffic analysis and D/F.

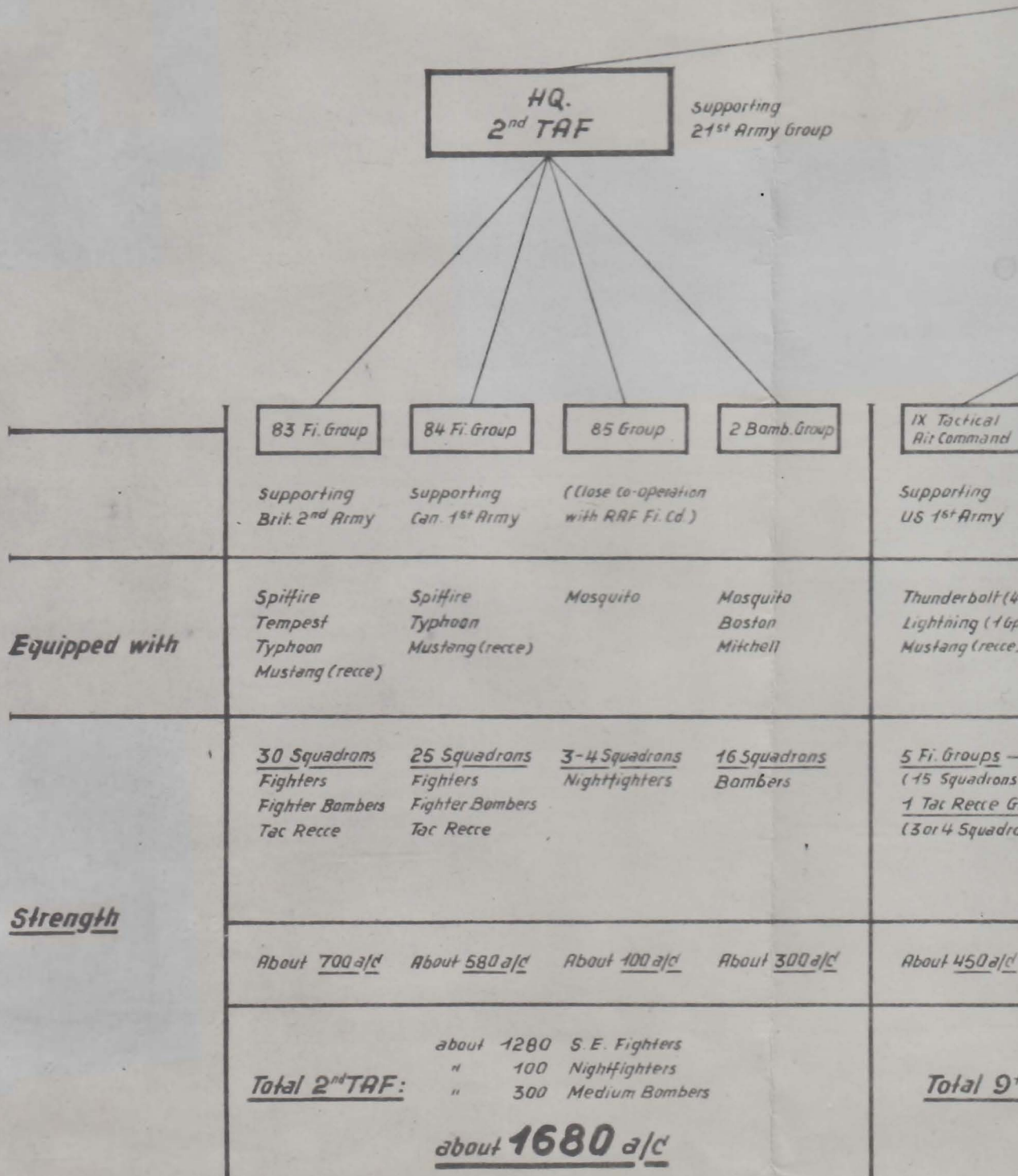
Shortly after the landing in Normandy a complete SOI of the Ninth Air Force fell into German hands. This gave, among other things, all R/T and W/T call-signs and frequencies, telephone code-names for units, slidex keys and keys for other cryptographic systems. This confirmed, that the identifications already made of Hq. 9th Air Force and all

TOP SECRET

Allied Expeditionary Air Force

Organization and Strength

— As of March 1945 —



Force

and Strength
 1945

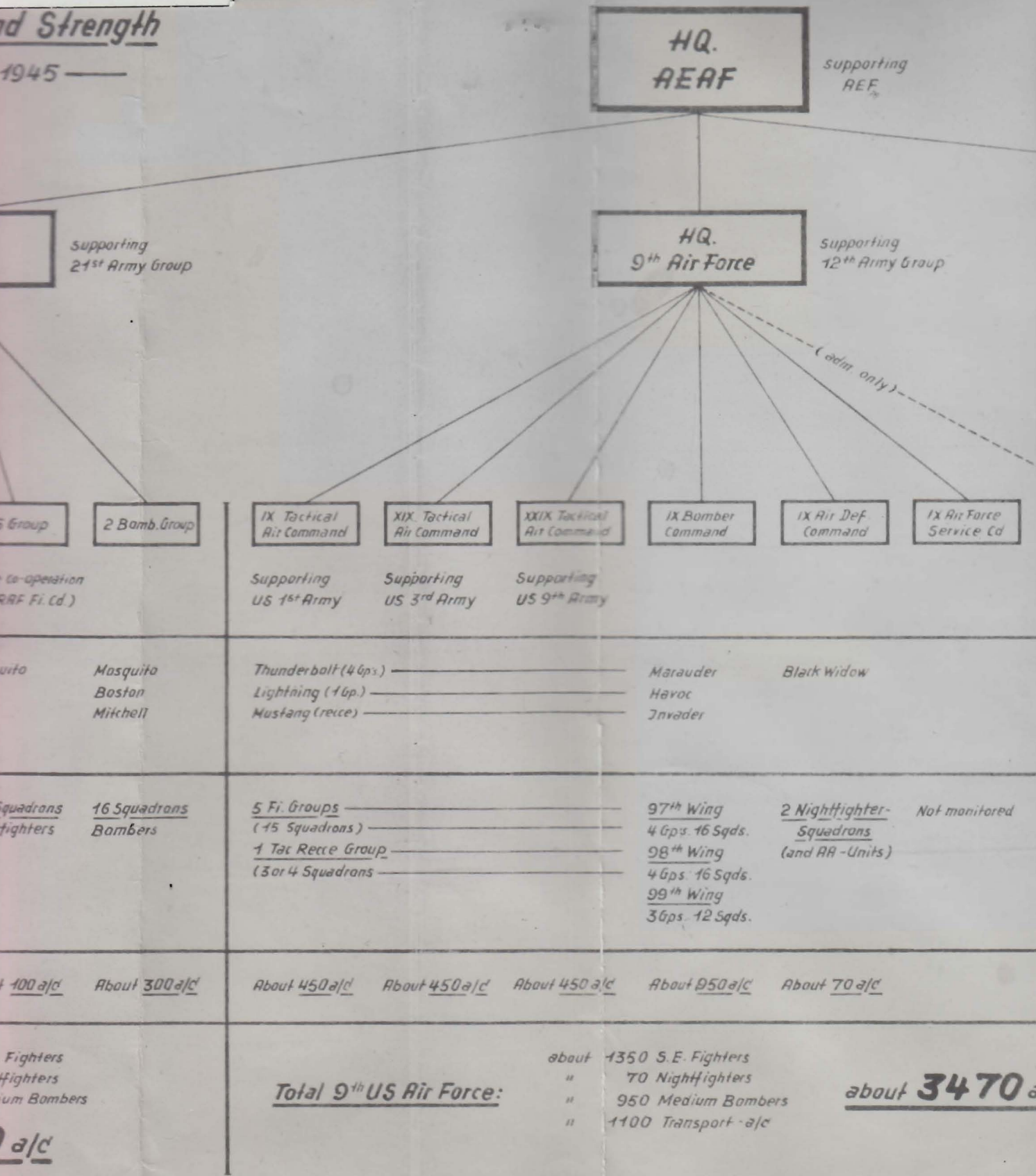
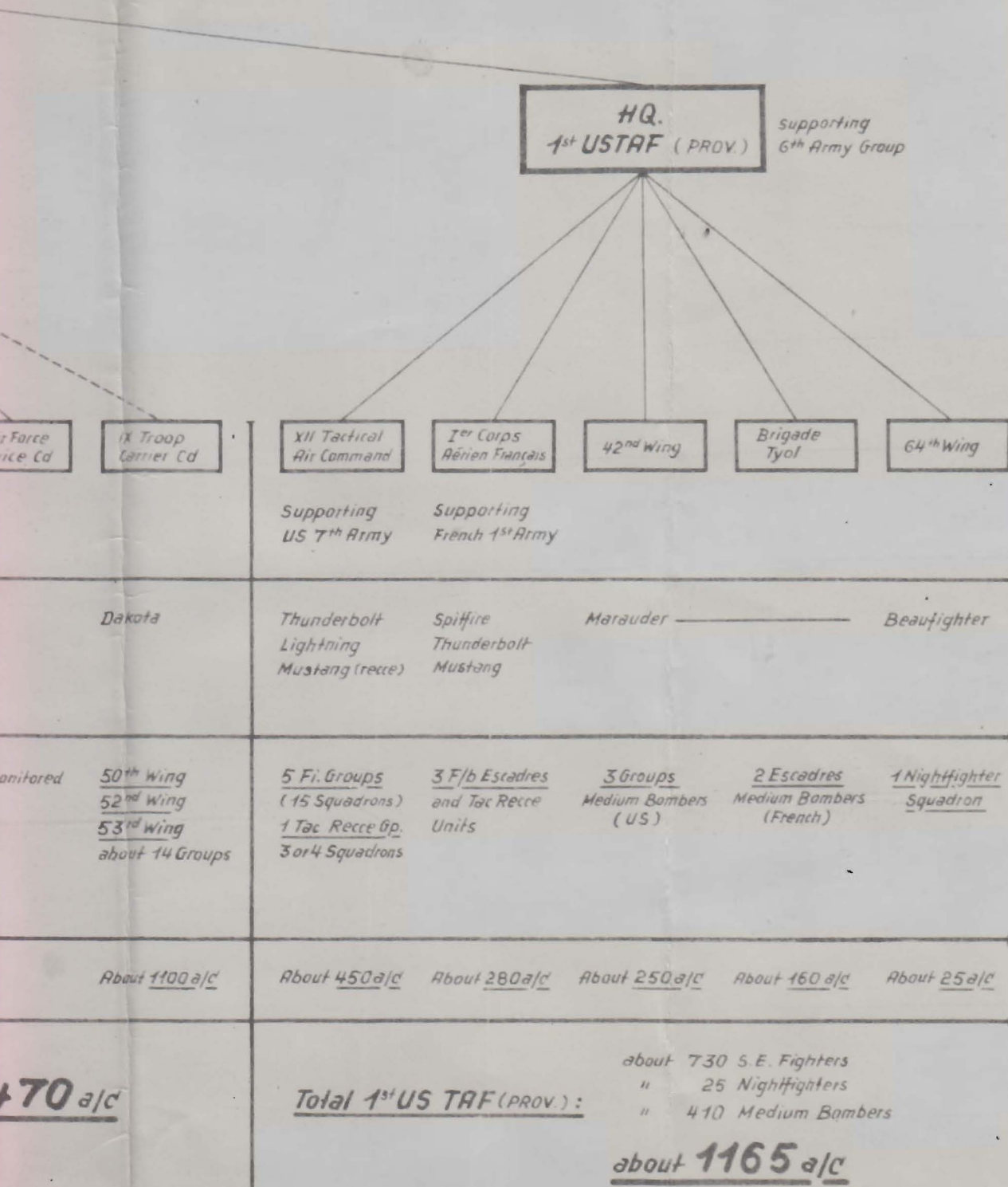


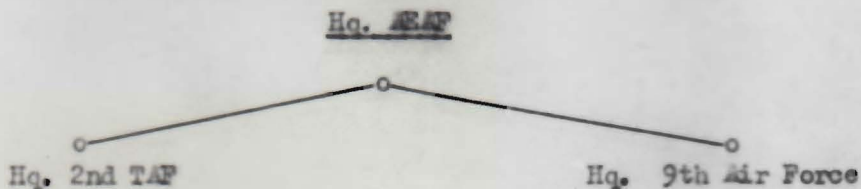
Figure No 4



subordinate commands were mostly correct. The same applied in the case of 83 Group, 84 Group and 2 Group of the RAF. One error was noted in that one of the headquarters of 2nd TAF had been thought to be the AEAFF. This error was understandable, as Hq. AEAFF engaged in hardly any radio traffic, while on the other hand, TAF had three Hq's (main, advanced, and rear) which provided considerable traffic.

An insight into the orders given by AEAFF could not be gained at that time, nor later, because the cryptographed messages in the traffic could not be deciphered.

The higher echelons were quite clear:



and later, toward the end of 1944:



The captured documents further revealed that the "Air Support Commands" had changed their names to "Tactical Air Commands".

The changes in assignment of the transport units (IX TCG and 38 Group) were frequent, and could not always be determined. Figure 4 shows the organization of AEAFF and its components, as of March, 1945.

TOP SECRET

2. Preparations for the Invasion (See Figure 5)

* Beginning with March, 1944 the signs of an approaching invasion became more and more abundant.

* Apart from American and British press and broadcast reports, PWI, and secret agent reports, SIS furnished the German High Command with the following information:

* a) The prolific operational training traffic which had been heard from the UK since 1942 had almost entirely ceased. There were now only minor exercises, mostly in collaboration with the Navy. Moreover, the communications networks were constantly rehearsing with practice traffic. In general, the impression prevailed that the British and American armies were now ready and waiting to play for keeps;

* b) The 9th Air Force now had a full complement of units. In May 1944, VHF R/T traffic revealed that the Middle Wallop sector had been abandoned by squadrons of 10 Fighter Group, RAF. At the same time there was a sudden and sharp spate of American fighter traffic in the Middle Wallop area, and in Southeast England (Maidstone, and Manston sectors). These units, heard for the first time, were immediately identified as belonging to the 9th Air Force. Both groups (Middle Wallop and Southeast England) used different frequency bands and were therefore assumed to be two air support commands for the support of two American armies.

* Previously intercepted clear-text messages had already indicated the existence of a IX and XIX ASC, but it was not known which of the ASC's was in the Middle Wallop area. The ASC in

TOP SECRET

Approximate shifting
AERF units prior to D-

~ Legend ~

- 83 Group (TAF)
- ⊕ 84 Group (TAF)
- 2 Bo. Group (TAF)
- △ 70 Wing
- 18 and XIX TAC's
- ⌋ Hq. ships with 80 Liaison Staffs

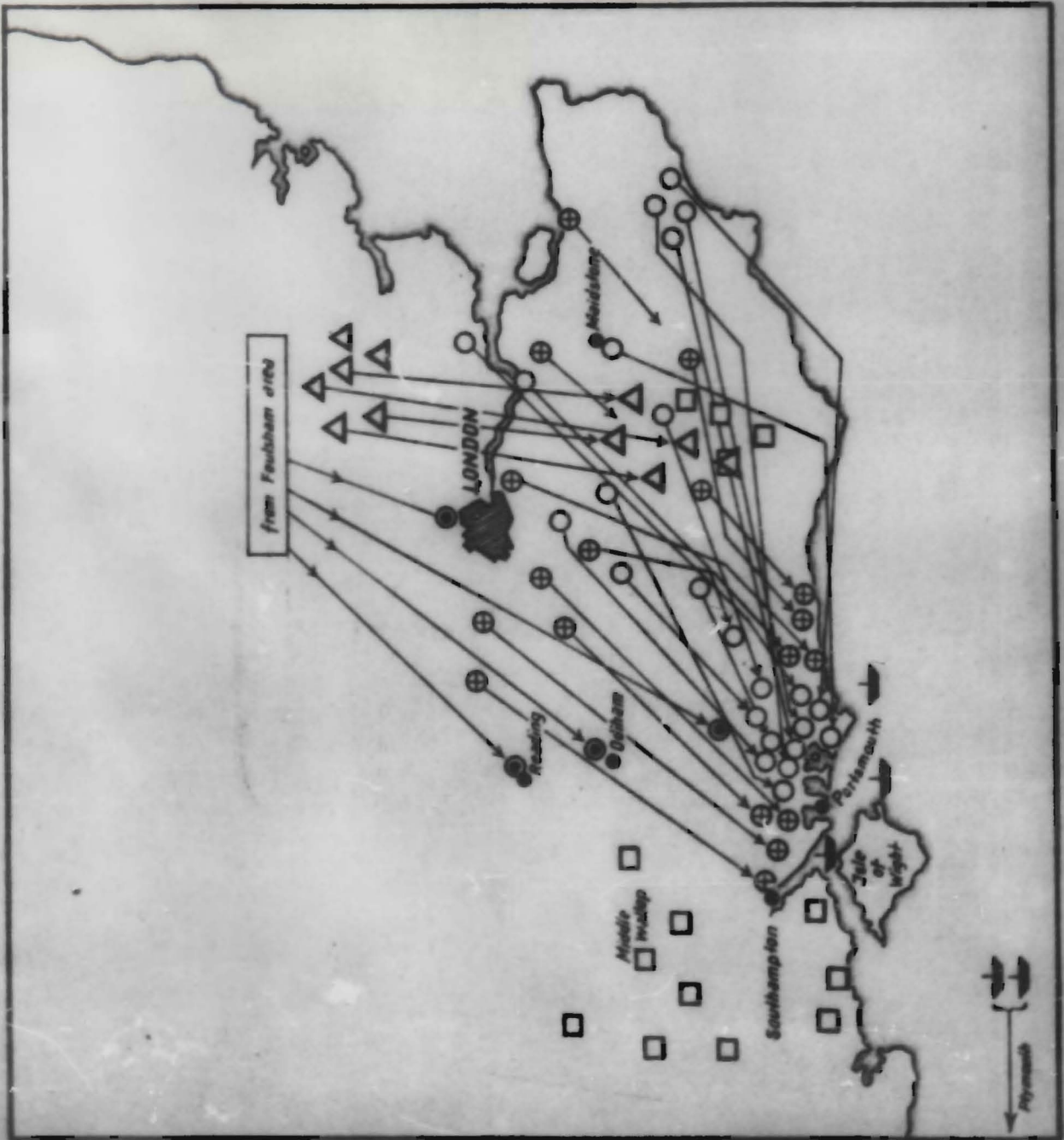


Figure No 5

TOP SECRET

Middle Wallop was known to be much stronger than the one in Southeast England, which was subsequently found to be the XIX ASC. When the XIX ASC was given the 70th Wing, toward the end of May, 1944, which was immediately recognized by the VHF-band used and its landing traffic in Southeast England, the invasion was known to be due at any moment.

The fighter groups of the 9th Air Force then carried out only moderate practice flights, and very rare sorties over France. Although the take of PW's was at a minimum at that time, and no reliable information was coming in from any other sources on the strength of units and occupation of airfields, SIS could give exact indications of strength and deployment, which were subsequently confirmed in every detail;

- c) The IX Troop Carrier Command, with about 1000 C-47's and gliders, was in readiness for a major airborne operation;
- d) Also, many transfers and re-groupings within 2nd TAF took place, such as the move of 2 Bomber Group from the Wash to the areas west and southeast of London, with its headquarters in the Reading area. The headquarters of 83 and 84 Groups were transferred to the Portsmouth-Tangmere area, and the majority of the flying unit also concentrated here;
- e) Radio silence of several days duration was frequently imposed on ARAF networks, probably in order to conceal changes in assignment and location. This step was cancelled out by the unceasing watchfulness of the German D/F organization, which ascertained changes in location as soon as the stations came back on the air;

TOP SECRET

TOP SECRET

- f) In the middle of May it was determined, also from D/F, that some of the American CP's were already set up on naval units, and were testing their communications networks from their stations aboard ship;
- g) The air war, as directed by the RAF and USAAF, concentrated its efforts against transportation targets in the Western occupied areas, and against special targets along the Channel coast.

As a summary of the intelligence derived by the Luftwaffe SIS, the Chi-Stelle Ob.d.L., Referat B, turned in a report at the end of May 1944 to the Luftwaffe High Command, stating, in substance, that: the redeployment of British air strength in preparation for the invasion had been completed; the American redeployment was about to be completed; 83 Fighter Group was intended for the support of the British Second Army; 84 Fighter Group was intended for the support of the Canadian First Army; both were concentrated in the Portsmouth area.

Most of the American ground support fighters had been assigned to the IX and XIX Air Support Commands, and were located in Southeast England. 2nd Bomber Group was in the area of London, the IX Bomber Command in its old location northeast of London. With respect to transports and medium bombers, it had to be assumed that the Americans would have twice the strength of the British.

Headquarters had already begun to move into ships in the Portsmouth Southampton areas.

On June 1, 1944 the Luftwaffe General Staff reported on the air situation substantially as follows:

TOP SECRET

TOP SECRET

All signs, especially in the conduct of the enemy air war, and in the intelligence furnished by SIS, point to a major landing operation by the enemy, to be expected within the next few days. By virtue of what is known of the enemy order of battle, and the air attacks he has been carrying out, this landing is to be expected between Calais and Cherbourg. Major landings at other places are not to be expected, but diversionary landings are considered possible.

3. The Invasion.

On the 5th of June 1944, at about 2300 hours, an unusually strong formation of aircraft of 100 Group RAF was airborne for the purpose of jamming German radar installations along the English Channel. The jamming screen moved slowly from East to West, and lasted several hours. It was assumed that this was to blanket the movement of a large number of ships.

On June 6th, between 0200 and 0300 hours in the morning, the 8th Air Force and IX Bomber Command weather reconnaissances were flown much earlier than usual. This made it clear that a major Allied air operation was to be reckoned with.

Meldekopf 2, therefore, gave all higher command posts in the West current warnings and situation reports. About 0200 hours the C-in-C, West, was informed that a major landing along the Channel coast was impending.

The approach of the landing fleet itself took place under radio silence. As soon as the landing had been made radio traffic immediately

TOP SECRET

TOP SECRET

began. All intercept stations then covered traffic relative to the invasion. The evaluation companies, and Referat B, each studied the material, and allocated coverage of the different frequencies among the several intercept stations once the traffic had been identified. There was also very close cooperation with the SIS of the Army. Long before D-day certain preparations had been made. For example:

- * a) All intercept stations were furnished the necessary reference material, such as lists of British and American abbreviations, call-sign lists of the AEAF, frequencies, and maps of all of Europe with the British map grid superimposed;
- * b) All intercept stations were instructed to drop traffic of secondary importance (naval reconnaissance aircraft, training, OTU's, etc., as soon as the invasion began, and to go on search with all available personnel;
- * c) The intelligence obtained was to be passed by direct wire, or in case of land-line failure, by W/T, to the Meldekoepfe, who, in turn, were to pass this information on to all interested subscribers as quickly as possible;
- * d) An entire intercept company was held in reserve, and was to search for any radio traffic which might indicate diversionary landings.

* From the first day of the invasion to the breakthrough at Avranches, the Luftwaffe SIS was able to operate with good success; practically all networks were identified, numerous enciphered messages broken, and cover names read as if clear-text. The following circumstances proved helpful:

TOP SECRET

TOP SECRET

- a) The last change of call-signs in AEAF before the invasion took place in the middle of May, 1944; therefore there was sufficient time to identify these call-signs and pass on the new call-sign list to the intercept stations. If the change in call-signs had occurred on D-day itself, considerable difficulties would have been added to the task of German signal intelligence;
- b) The British grid system used for reporting positions (modified system) was known. However, no maps of France, with this grid, had been captured before the invasion. The Army High Command, at the suggestion of Referat B, developed an adaptation of this grid on to the French Lambeth grid. Hints for accomplishing this were obtained from RAF maps found on captured pilots. This reconstructed grid proved correct, and therefore all positions reported in "modified system" could be read immediately, as long as they were not reciphered;
- c) As early as 1942, cryptanalysis teams of both the Army and Luftwaffe SIS had worked on breaking Slidex messages. Since after the landing Slidex traffic was plentiful, cryptanalysts could work efficiently, and were able to break the daily key by 10 A.M.

The evaluation of all intercepted material was carried out by two main processing sections:

a) Tactical Evaluation.

Warnings were given to units in danger of attack. Important flash messages were broadcast to all interested headquarters.

Comprehensive air and ground situation reports were also currently

TOP SECRET

TOP SECRET

disseminated;

b) Strategic Evaluation.

This consisted of determining the Allied order of battle, of deciding what forces had already been committed, where they were located, and the strength and location of reserves.

Strategic evaluation was also concerned with answering the question as to whether the enemy planned to land at another point, or would commit his reserves, still in Britain, to the Normandy beachhead.

On D plus 10 this question could be answered as follows:

- a) Only the advanced headquarters of 83 Group, RAF, and IX TAC, and an advanced headquarters of 9th Air Force, took part in the landing. These headquarters were first D/F'ed on board ship, but later moved to positions on land. The headquarters of TAF, 84 Group, and XIX TAC on the other hand, were still being D/F'ed in their old locations in UK. Thus, the possibility of a second landing still seemed to exist.

Those headquarters still known to be in Great Britain were regularly D/F'ed several times a day, since it was evident that any changes in their position would cast light on the disposition to be made of the armies not yet committed (3rd U.S. Army, Canadian 1st Army);

- b) In reality, the subsequent move of the headquarters of 84 Group and XIX TAC to Normandy actually did betray the commitment of the 3rd U.S. Army and the 1st Canadian Army, several days before they were thrown into the battle. At the same time the Advanced Hq.

TOP SECRET

TOP SECRET

of TAF was spotted in Normandy. This proved that an invasion at some other point would not take place.

* After the general situation was thus clarified, SIS could then concentrate on such details as the movements of various groups and squadrons from the UK to Normandy, the use of new airfields, fighter control on the beachhead, night fighters, etc. As all Air Forces call-signs were completely known, thanks to a most comprehensive captured document, this work offered but few difficulties. Up until the Avranches breakthrough an accurate air situation report could be drawn up daily.

4. Operations of the Air Support Parties Up To the Breakthrough at Avranches.

a) Requests for Air Support.

Up to the breakthrough at Avranches, that is during the landing and the war of position, the principal source of all German intelligence on the Air Support Parties was the W/T traffic between ASP's and control stations (Corps or Army) especially the air support requests in the form previously indicated.

Operational control was at that time, as previously, in the hands of the TAC Hqs, while later, during the mobile warfare, control passed to a greater extent to the ASP's.

All ASP networks were continuously monitored, day and night, new networks were intercepted, and all changes immediately observed. The intercept operators were briefed on the meaning of the "ABCDEF" messages. If an operator picked one up, he knew that from then on time was of the essence. For example, let us suppose that the following message were intercepted at 1007 hours:

TOP SECRET

"A PLE3 B GUN POSITION RA519 C ASP D LIGHT AA E NOT S CP
VILLAGE F 1003 AR"

As soon as the first groups were taken down, the intercept operator called the control chief to his set. When the target and the requested time of attack were learned, the control chief sent out the proper warning. From this point, the American radio operator often went on working for 10-15 minutes, in order to straighten out DMI's and have his message receipted for.

In the first weeks after the landing it was often possible to enable the threatened units and CP's to take counter-measures, change position, take cover, notify flak and fighter defense, etc., and thereby save lives and equipment, thanks to prompt warning.

The German command was further enabled to learn of weak points in the enemy's lines from messages of this sort, and take advantage of the information. Messages like the following were particularly frequent in the early days:

"AIR SUPPORT URGENTLY REQUIRED, SITUATION CRITICAL"

The commander of the sector concerned was notified immediately and he could take action accordingly, and profit by the enemy's announced weakness.

The opinion that clear text just before a contemplated operation is no longer insecure, is here proved untenable, as it was in the Dieppe operation back in 1942.

b) Advance Reports of Take-off for Air Support Mission.

The advance take-off reports, consisting of three words, of

which the middle one was "sugar", "candy" or "sweet", could not be broken. It was known that these messages were connected with previous requests for Air Support by the ASP's, and that sorties by flying units followed. However, the individual messages were never read.

c) Tactical Evaluation of ASP Traffic.

ASP networks yielded much more information about Allied Army order of battle than did the regular army networks. Individual networks were soon clarified with the help of clear-text messages and cryptographed messages that could be broken.

The decoded Slidex messages contained many items of information, such as the position of division headquarters, subdivisions of combat sectors, positions occupied by forward troops, etc.

Reconstructing the networks made it possible to note the movement of units from one sector to another, and frequently gave away intended attacks. This evaluation was made difficult by the daily call-sign changes. Since the frequencies remained the same, however, the general picture was never lost;

d) Direction of Operations.

Control of fighter and fighter bomber formations during the first days of the invasion was carried out by the well-organized fighter control in Southern England. During this period "fighter director tenders" were also placed along the invasion coast. On rare occasions the Hq. ships, with AEAFF staffs aboard, also joined

TOP SECRET

in the control of fighter operations. Reconnaissance reports of immediate importance were passed to these Hqs. on R/T, directly from the air.

A few days after the first landing the main control stations and some of the fighter control centers of IX TAC went ashore and fighter control was thenceforth carried on from the continent. Since the fighter pilots took off on missions on the basis of the requests for air support passed by the ASP's on W/T, a fighter control while over the battlefield was not really necessary. The pilots knew their targets, and only in the event that they could not find them, did they turn to the main control station for help. It also informed the fighters of the air situation. On the whole, the main control station held a very tight rein on the operations of the aircraft within the TAC, since the aircraft were turned over only rarely to the subordinate fighter controls. VHF R/T traffic between fighters and ASP was picked up in very limited quantities only.

5. Operations of the Air Support Parties from Avranches to the End of the War.

After the Avranches breakthrough, a complete change took place in American air support tactics. The system used up to that time for requesting air support was too slow.

By virtue of its tremendous air superiority, the American air forces could afford to keep a screen over the deepest armored penetrations at all times. When divisions encountered obstacles, the removal of which required air support, the ASP called on R/T the fighter

TOP SECRET

TOP SECRET

units already airborne in its immediate area, and guided them to the target with tracer ammunition and visual signals. These "cabrank" tactics naturally saved much time and were maintained even after the front was stabilized. Fighter units were sent in regular shifts to definite areas, with instructions to call the local ASP's for targets, and to carry out any current orders for air support that they might be given.

These tactics were further refined in the later "pineapple" and "Dixie" procedures. Here the reconnaissance aircraft put the fighter-bombers right on their targets by VHF R/T.

After the Avanches breakthrough, no more important information was obtained from the W/T traffic of the ASP's. But, on the other hand, VHF R/T now offered new and important opportunities for the Luftwaffe SIS.

The rapid Allied advances caused several moves on the part of units of the Luftwaffe SIS Regiment West, and therefore the measures which the new enemy situation called for could not be carried out right away. When the Western Front became stable once again, the following set-up prevailed:

- a) Collecting VHF intelligence at a Meldekopf in the rear, and transmitting warnings to Army units at the front took too much time, and therefore was no longer successful;
- b) The reverse procedure had to be followed: the intercept organization was broken up, and small teams of intercept personnel, with VHF receivers, were sent out to Army Headquarters to cover the traffic of each sector. The following is an example of the work of an SIS liaison team with the 5th Panzer Army, which faced the American Third Army and XIX TAC:

TOP SECRET

TOP SECRET

aa) Immediate Evaluation.

The traffic of XIX TAC could be covered almost in its entirety with the most limited means (two receivers and three men), because the air support traffic came generally only on the TAC common frequency. Both receivers were left on from daybreak to evening. One monitored the common frequency of XIX TAC, the other was used for search. If there was no operation on, both sets were covered by one operator. As soon as the first XIX TAC aircraft was heard, the following message was passed on to the staff:

"FIGHTER BOMBER ACTIVITY BEGINNING IN OUR SECTOR"

This, and subsequent reports, was sent on from G2 (Air) to the division. The traffic supervision section would also be notified.

The R/T traffic intercepted soon gave a good idea of the air situation. Enemy reconnaissance reports, such as those below, were passed directly to the combat troops:

"IN SAARBURG RR STATION THERE IS A FREIGHT TRAIN LOADED WITH
TANKS."

"EXCELLENT TARGET. APPROXIMATELY 25 TANKS IN PARROY WOODS AT
R2694."

Also order to attack, and target indications, such as:

"ATTACK BATTERY FIRING AT CORNER OF WOODS AT V9436."

"I HAVE A TARGET FOR YOU. 300 METERS NORTH OF THE CROSS ROADS
AT R1723 ARE 8 ENEMY TANKS."

TOP SECRET

TOP SECRET

In many cases, counter-measures or evasive action could be taken in time. In this manner the GP of the 11th Pz. Division was twice warned in sufficient time to allow its staff to get out, and to watch from a safe distance the attack by XIX TAC aircraft which followed. On another occasion thirty tanks, which were being held in reserve, were able to hide in a tunnel;

bb) Tactical Evaluation for the Army.

During the entire period from the start of the invasion to the beginning of 1945, the ASP's used the same R/T call-signs when calling ground force units. This enabled evaluation to accomplish the following:

1. The transfer of a division could be spotted immediately, as the sector of operations assigned to its ASP was, without question, the sector the division was operating in;
2. Assignment of a division to a different Army could be definitely recognized. Each TAC was committed to the air support of an Army. Whenever the ASP of a division turned up on the common frequency of a different TAC, this could only mean that the division was now assigned to another Army. Changes in the corps assignment of a division were frequently suspected by the area of operations;
3. Concentration points could be determined by the packing of several ASP's in one area, and the fact that their targets were close together.

TOP SECRET

TOP SECRET

Information gained in this way was also passed on to the G-2 (Air), who would incorporate it into the regular report on the enemy situation. Moreover, the intelligence obtained by all these liaison teams, as well as that of the R/T platoons of the intercept companies, was all gathered by the evaluation section of the regiment.

The Luftwaffe Intelligence Service could thus furnish valuable information to the Army on the enemy ground order of battle. The extensive regrouping which followed Von Rundstedt's Ardennes offensive in December 1944 was followed, and the picture immediately passed on to the Army, at a time when the C-in-C West had no information from any other source on the current enemy order of battle.

Finally, the Americans seemed to have become aware of the dangers of unchanging ASP call-signs. From March 1945, there was a change and exchange of call-signs every fortnight or 10 days. From then on, tactical evaluation of ASP traffic was impossible.

6. Operations by British and Canadian Tentacles from D-day to the End of the War.

a) Tactics.

Whereas the Americans had transferred control of ground support aircraft more and more to the air liaison teams with the divisions or advanced echelons, the British and Canadian units retained the principal of a central control near Army Hq.

The Americans generally took off without knowing exactly where their target was to be, and received their precise target instructions from the ASP after they were airborne.

TOP SECRET

TOP SECRET

In most cases, the British took off after being briefed on the specific target to be attacked, and evidence of control of the operation by tentacles was an exception.

The American system, therefore, permitted the flying units to be stationed relatively far behind the battle line, in a position of safety. But the British, it was noted, in their effort to save time, stationed their units forward, often just behind the battle line. This makes it clear that the British tentacles did not exercise as important a function as the American ASP's. The mission of the tentacles was:

- aa) To pass on the requests for air support to the fighter control center;
- bb) To brief the ground forces on the air situation, and the RAF on the ground situation;
- cc) To be responsible for having the artillery mark with smoke grenades and shells, targets otherwise hard to recognize.

b) Radio Traffic.

In contrast to the Americans, who went over more and more to VHF R/T, the British used HF W/T. The tentacles sent their W/T requests for air support and their messages, partly "in the clear", partly cryptographed, to the fighter control center. Since Slidex messages could almost always be broken, the interception and evaluation of the tentacles' radio traffic yielded good results. Frequently, intended bombing attacks, such as those of the 2 Bomber Group, were known in every detail, 24 hours in advance.

TOP SECRET

TOP SECRET

c) Tactical Evaluation for the Army.

This was virtually the same as the evaluation done concerning the American Air Support Parties. The total number of tentacles in operation was known approximately, and therefore during attacks, such as those of the Canadian First Army in the upper Rhineland, the tentacle networks revealed to what extent units were already committed, or were still being held in reserve.

7. Ninth Air Force from D-day to the End of the War.a) Organization and Movements.

In the course of the campaign it became ever clearer that conclusions as to the order of battle of the ground forces could be drawn from the order of battle of the air forces used for ground support, especially the Tactical Air Commands. For example, when it was established, during a lull in the fighting, that IX TAC had increased from 5 to 8 groups, this fact could be taken without doubt to mean that the First Army was planning an attack. For this reason other cover, such as the RAF Coastal Command, etc., was relegated more and more to the background, and all attention was focused on any changes which might take place within AEAF. Other intelligence obtained included:

- aa) The Seventh Army was transferred to the Western Front from Southern France, and XII TAC was for a time placed under 9th Air Force;
- bb) In the beginning of October 1944, XXIX TAC was activated, this fact was immediately taken to indicate the commitment of an additional American Army. At that time the German High Command

TOP SECRET

TOP SECRET

had no reliable information on the Ninth Army. By constantly D/F-ing the Hq. of XXIX TAC, and by establishing that certain groups had been assigned to it from other TAC's, the general area planned for the operations of the Ninth Army was ascertained;

- cc) The organization of the IX Air Defense Command, was clarified from decoded messages, and from D/F bearings revealing details of night fighters and flak;
- dd) Details concerning IX Troop Carrier Command were determined;
- ee) In October, 1944, regrouping within the TAC's gave away the intended attack of the First and Ninth Armies (American) in the Aachen-Geilenkirchen area;
- ff) The activation of the 1st USTAF (Prov.) was observed;
- gg) Constant changes in the main line of defense for staving off the German counter-offensive of December 16, 1944 were noted:

First, the defensive measures by IX TAC, to which were assigned groups from other TAC's, as well as Typhoons from TAF;

After the German offensive had been contained, the point of concentration moved to XIX TAC, which supported the counter-attack of the Third Army. XIX TAC had nine groups, IX TAC six, and XXIX TAC three.

- hh) After the Rundstedt offensive was stopped and pushed back, there was a new concentration of forces in the Aachen-Geilenkirchen area where the air of strength was as follows:

TOP SECRET

TOP SECRET

IX, XIX and XXIX TAC had each five fighter or fighter bomber groups, and one tactical reconnaissance group. XIX TAC was reinforced with a group which for a long time had been assigned to XII TAC.

XII TAC was brought up to the same strength as the other TAC's by having two groups transferred to it from XXII TAC in Italy. It was easy to determine which groups they were as they did not change call-signs, and were already known in the Mediterranean.

- ii) Temporary assignment of two groups of VIII Fighter Command to IX and XIX TAC;
- kk) Transfer of IX Bomber Command from Earls Colne, England, to the Paris area, and later further east;
- ll) The transfer of 9th Air Force Advanced Hq. from Luxemburg to Neaur, and the appearance of Advance Hq., AEAF in its new location at Rheims, was a final indication of the intended 1945 spring offensive.

b) Operations of IX Bomber Command.

The great difficulties which IX Bomber Command created for German signal intelligence have already been mentioned on different occasions. In spite of this, R/T traffic on known Marauder frequencies made possible swift advance warnings of approaching flights, and by D/P-ing this traffic the approximate course could be determined. The traffic was insufficient for continuous tracking, although it revealed important information as to formation, altitude, fighter cover, etc.

TOP SECRET

TOP SECRET

The extent to which medium bombers depended on the weather was very noticeable. The special weather reconnaissance aircraft of IX Bomber Command which flew an intensive weather flight before each mission, provided us with a further means of giving warning, and made it possible to pass on important information to the German Weather Service. The recalling of missions for reasons of weather was frequently noted. The large amount of R/T that was heard whenever this took place made it possible to cancel warnings which had already been given.

In order to avoid dependence on the weather, at least in part, and to make it possible to drop bombs without being able to see the ground, pathfinders of IX Bomber Command were equipped with "Boomerang". This more than doubled the number of missions flown by IX Bomber Command from December 1944 to February 1945, although its strength remained the same. An accurate check as to whether "Boomerang" or visual methods were being used was made possible as follows:

Many Allied radio networks, with stations principally in the Holland-Belgium area, were recognized as the ground organization of a "remote control procedure". The control station was north of London, and its call-sign was X25. There were also the following networks:

- aa) Ground stations of the "hyperbola chain" Cologne;
- bb) Ground stations of the "hyperbola chain" Ruhr;
- cc) "GH" ground stations;
- dd) "Boomerang" ground stations.

TOP SECRET

TOP SECRET

Whenever a mission was in progress against western Germany, there was lively radio traffic between the "Boomerang" ground stations. German SIS could tell, from certain numbers present in the traffic, which Allied outfit units were participating. In this way it was always possible to determine which missions of IX Bomber Command were being "Boomerang-controlled".

It was also possible to reconstruct the arc along which the aircraft flew to the target, by degrees, distances, and other values given. With the help of different bits and pieces of information, the target area could often be determined as early as thirty minutes before the attack, and warning given accordingly. The active radio traffic of the "X25" organization was very difficult to evaluate. A special team worked on the problem for a long time. Details were kept secret, and were only known by the specialists who were working on it. At any rate, the following were possible:

- aa) Advance warnings of missions by IX Bomber Command or RAF;
- bb) First a rough estimate of the target area; later, an exact indication.

8. The 2nd Tactical Air Force from D-day to the End of the War.

a) Organization and Movements.

No major changes in its organization were noted between D-day and the end of the war. The widely held opinion that another British army would be committed, in addition to the British Second and Canadian First Armies, which was to be supported by 36 Fighter Group, had not been borne out by signal intelligence.

TOP SECRET

TOP SECRET

In order to obtain a general picture of the changes in the order of battle of TAF units, from which conclusions could be drawn on the Army order of battle, individual control stations were D/P'ed daily, and sometimes several times a day. All advanced echelon call-signs were D/P'ed immediately. The following changes are still remembered:

- aa) Movement of 2 Bomber Group from Great Britain to the continent;
- bb) The moving forward of Hq. 84 Group as the final indication for the planned attack of the Canadian First Army. The moving up of flying units was known in every detail from point-to-point traffic and VHF R/T.

b) Operations of 2 Bomber Group.

The monitoring of air-to-ground R/T of 2 Bomber Group brought only very limited intelligence. The group maintained good radio discipline.

Details of the missions were only occasionally known from the tentacle networks, or from the tactical reconnaissance broadcast of the Armies. These sorties would include planned night attacks on communications by Mosquito squadrons.

In the daytime, the squadrons of 2 Bomber Group were observed, in the last months of the war, to be using a new form of blind bombing controlled from the ground. This method was first used by the fighter bomber units of 1st USTAF (Prov.), where they were known as "Egg-Basket". Later the 9th Air Force fighter-bombers took it over under the name "Pickled-Barrel". The aircraft were

TOP SECRET

TOP SECRET

vector to the target by very accurate bearings from a fighter control. After the ground station had determined the altitude of the aircraft, the controller ordered the bomb-bays opened, and "bombs away". Signal intelligence was unable to determine how effective this bombing method was, because, whenever the ground station asked the aircraft whether the bombs had hit the target, the answer always was that this could not be determined because of poor visibility.

9. The 1st United States Tactical Air Force (Provisional).

a) Organization and Order of Battle.

The landing in the south of France (July 1944) was covered by the Luftwaffe SIS in the Mediterranean. After XII TAC was assigned to AEAFF, the operations were covered by SIS Regiment West. The task was made easy because XII TAC and its units appeared on the Western Front using the same call-signs they had used in the South.

After the almost complete occupation of France by the Allies in the fall of 1944, there followed the activation of the French First Army, which operated in the Alsace-Lorraine sector. Radio traffic soon made it possible to recognize the organization of French ground support fighters under a special corps (1er Corps Aerien Francais). Toward the end of 1944, press notices and signal intelligence gave evidence of the following changes, both about the same time:

Newly activated 6th U.S. Army Group with 1st USTAF (Prov.).

Assigned: French First Army with 1er Corps Aerien Francais,
U.S. Seventh Army with XII TAC.

TOP SECRET

TOP SECRET

Not until later was the organization of the twin-engine bomber units of 1st USTAF (Prov.) found to consist of two each American and French groups in the 42nd U.S. Wing and the French "Brigade Tyal".

In addition, 1st USTAF had a night fighter squadron to protect its area of deployment. It also worked closely with 9th Air Force, especially in matter of air transport and supply.

aa) Details of 1st USTAF Units.

The fighter groups of XII TAC originally came from the Mediterranean. After the front was stabilized on the Alsace border, most of the groups which had been brought from Italy were sent back there, and XII TAC was assigned groups from the 9th Air Force. Not until shortly before the beginning of the Allied offensive, at the end of February 1945, was one of these groups (371st Fighter Group) given back to 9th Air Force (XIX TAC). To take its place, two groups were brought up anew from Italy (20th and 86th Fighter Groups).

bb) The French Escadres of the 1er CAF came from the Mediterranean. Monitoring these Escadres provided certain difficulties, because they did not use their own W/T call-signs, but rather sent their mission reports under the call-sign of the American group stationed on the same field. The R/T traffic however gave an ever current picture of the 1er CAF.

cc) The radio traffic of the medium bomber units, both HF and VHF was very prolific. Warnings of impending attacks, and flight path tracking therefore offered no problems.

TOP SECRET

TOP SECRET

b) Fighter Control and Operations.

There was no substantial difference between the fighter control methods of 1st USTAF and 9th AF, but innovations were often first introduced by 1st USTAF and then were used by 9th Air Force after they proved their merit (e.g. "Egg-Basket", "Pineapple", and "Dixie").

It was interesting to compare the combat efficiency of the French and American units from the R/T traffic. The French squadrons were notably low on combat morale, they showed pronounced distaste for flak, and sometimes used excuses, such as motor trouble or lack of fuel, in order to fly home when German fighters were reported. On the other hand, when estimating their own successes, they were more modest than American pilots.

c) Air Support Traffic.

The 1st USTAF went right over to "Cabrank" tactics, as soon as the front was stabilized in Alsace. The possibilities for immediate evaluation at this time were the same as in the case of the 9th Air Force. On the other hand, the 1st USTAF had a different system of allocating call-signs to the ASP's. In the 9th Air Force, every army division and every combat team had its own permanent call-sign. But here the army corps had its permanent call-sign, and the ASP's of the subordinate divisions or combat teams used the corps call-sign and a letter suffix. As these letter suffixes were allocated at random, their number corresponded only roughly to the number of divisions assigned. An infantry division had one call-sign, and an armored division had three,

TOP SECRET

TOP SECRET

one for the division itself, and one for each of the combat teams. There was no way of telling, whether a call-sign belonged to an infantry or an armored division, and therefore possibilities of strategic evaluation for the benefit of the Army were very limited.

10. Air Defense on the Continent.

In order to provide for air defense of their own operational areas, each air force under ARAF had its own organization:

2nd TAF	-	85 Group
9th Air Force	-	IX Air Defense Command
1st USTAF	-	64th Wing

These air defense organization had at their disposal:

- a) radar units;
- b) flak units;
- c) night fighters;
- d) day fighters (only 85 Group).

a) Radio Traffic of the Radar Units.

In order to give timely warning of German aircraft as well as to control day and night fighters, the Allies installed a very dense radar system. Together with the intensive monitoring of these radars by the German radar intercept service, SIS also derived important intelligence from the radio traffic of the radar units.

aa) 9th Air Force.

Form of messages.

As far back as 1942, the radio traffic of motorized air

TOP SECRET

TOP SECRET

raid warning units was intercepted. This traffic continuously reported aircraft plots from the time they were first picked up, until they disappeared from the scope. Some networks reported only hostile or unidentified aircraft, while others included friendly plots. Evidently these messages were intended to inform the flak and fighter defense of the air situation. Within the 9th Air Force these reports took the following form:

T 81 Pr P9012 h W10 A8

Explanation:

- T81 = target No. 81 (numbered serially, beginning anew every day);
- Pr = course as given on the British orientation clock (points of the compass encoded with letters, e.g. Pr = north);
- P9012 = position of the aircraft when picked up, given on the British grid (modified system);
- h = hostile (f = friendly; x = unknown);
- W10 = 10 aircraft; 10 vessels;
- A8 = angels 8, i.e. altitude in angels.

Evaluation of the reports.

If the formation in question were German, the SIS liaison officer of the headquarters concerned was notified immediately. If the formation were Allied, and on its way to a target, then Fighter Command and flak would be notified. The situation was often such, especially after the occupation of France, that these reports were the only source of advanced knowledge that an RAF formation was airborne. Several successful operations by the German night fighters were credited to these messages. The cover-name for these reports was "Wildkatze" (Wildcat).

TOP SECRET

TOP SECRET

Every message from a given radar station was plotted on a map. The information obtained would give:

Location of the radar installation;
Range of the radar;
Blind spots in its sweep, due to mountains or other geographic obstacles;
Movements of radar stations;
Gaps in the Allied radar system.

bb) 2nd TAF.

2nd TAF disposed of an analogous organization. Except for a few rare cases, such as the beginning of the invasion, and when telephone lines were down, nothing more than practice traffic was ever heard on its radar networks. Probably land-lines were used, and the stations provided with transmitters as a stand-by only.

cc) 1st USTAF.

Within the 64th Wing, reports of radar plots were almost entirely given on VHF R/T. Putting together and evaluating the reports was done in the same way as in the case of the 9th Air Force. Because of the peculiarities of VHF wave propagation, interception of this traffic was not as complete as it was with the 9th Air Force. Since flights within the scope of 1st USTAF were much less numerous than in the northern sectors, the evaluation of these reports did not have the same significance.

b) Radio Traffic of Flak Units.

Many details concerning the flak units of IX Air Defense Command were learned from intercepted and deciphered messages, but these are unfortunately no longer remembered.

TOP SECRET

TOP SECRET

c) Radio Traffic of Night Fighters.aa) Organization and Strength.

Before the start of the decisive Allied offensive in February 1945, the strength of night fighter units was assumed to be as follows:

85 Group	3-4 Squadrons (Mosquitos);
IX Air Defense Command	2 Squadrons (Black Widows);
64th Wing	1 Squadron (Beaufighters).

The squadrons were situated in the areas behind the fronts of each Army Group, and covered only the sector assigned to them.

bb) Control.

Night fighter control on the continent continued along the same lines as it had been developed during the years before the invasion. However, there were no sector controls on the Continent, such as there were in England, which would hold the night fighters in waiting areas, and only turn the aircraft over to GCI controls after German aircraft had been reported. On the Continent night fighters would report in to the GCI station immediately after take-off, and the controller would hold them in waiting along illuminated patrol courses. Only in the area of 85 Group was there a control station to which the other controls were subordinate, and to which all night fighters reported before being parceled out to the subordinate controls.

Night fighter control on the Continent was not as precise as it was over England. The more the radar network was perfected and completed, the more accurate GCI control became. It was

TOP SECRET

TOP SECRET

over the Continent that the first example of simultaneous control of as many as three night fighters by one GCI station was observed.

Each GCI station worked on its own frequency. In order to assure as large an area as possible for a GCI-controlled night fighter to work in, the eight-button system was changed to a twelve-button system (i.e. 3 SCR 522's). This enabled a night fighter to be controlled by ten different GCI stations. (4-channel was the take-off and landing frequency, and another channel, 115.1 mcs, was the common British-American liaison frequency). An exception to this was a squadron of 64th Wing which probably used only four buttons, it was never heard on more than two frequencies.

American night fighters were very seldom controlled by British controllers, and vice versa. The only exception was during the German Ardennes Offensive.

cc) Operations.

Although before the invasion, German air crews reported that they were attacked, while on missions over England, by American "Lightning" night fighters (they were probably confused by the twin tail booms of the Black Widow), SIS obtained no evidence of an American night fighter squadron until some time after the landings in Normandy.

American night fighters at first showed limited operational experience, in contrast to the British units, but this weakness

TOP SECRET

TOP SECRET

was soon overcome. Each squadron sent up 10-15 night fighters every night; sometimes the number was increased to 20-25.

Considering this number of sorties, victories were slight, even in view of the limited German air activity. Nevertheless, sometimes one night fighter would claim two victories in one night.

The fewer night missions flown by the Luftwaffe, the more the Allied night fighters were used to attack ground targets, especially communications. They also passed running commentaries on observations that seemed important to them, to the fighter control stations of the TAC's, and sometimes even to the ASP's.

d) Radio Traffic of Day Fighters.

The American air defense organizations never had any day fighter units under their command. The TAC's were considered strong enough to take over the defense of their areas in the event of a daylight attack by the Luftwaffe. 85 Group, on the other hand, had some day-fighter squadrons in the beginning, but since they were practically never called upon they were soon given up to 83 and 84 Fighter Groups, or to Fighter Command. Occasional daylight operations by the Luftwaffe could be beaten off without difficulty by the ground support aircraft.

TOP SECRET

G. Allied Air Transport Units. (See Figure 6)

1. Ninth Troop Carrier Command

a) Organization and Movements

IX Troop Carrier Command was divided into:

50th TC Wing;
52nd TC Wing;
53rd TC Wing

Each wing had an average of four groups, each group consisting of four squadrons. Moreover the command as a whole had one pathfinder group.

In the fall of 1944, the 50th Wing transferred from the UK to the Paris area. The 52nd and 53rd Wings followed about February, 1945. Whereas the 50th Wing effected its move under excellent radio discipline, the next wing to move made the work of the German SIS very easy by many clear text messages. In addition, many movements could be recognized by the use of advanced echelon call-signs.

b) Combat Operations

All major airborne operations and supply-dropping missions executed in the West were performed by the IX TCC, which furnished the bulk of the transport and glider-towing aircraft. The most important operations were:

Airborne landing in Normandy	June 1944;
Airborne Invasion of Holland	September 1944;
Airborne landing in Bocholt	March 1945;
Large-scale supply-dropping in Bastogne	December 1944.

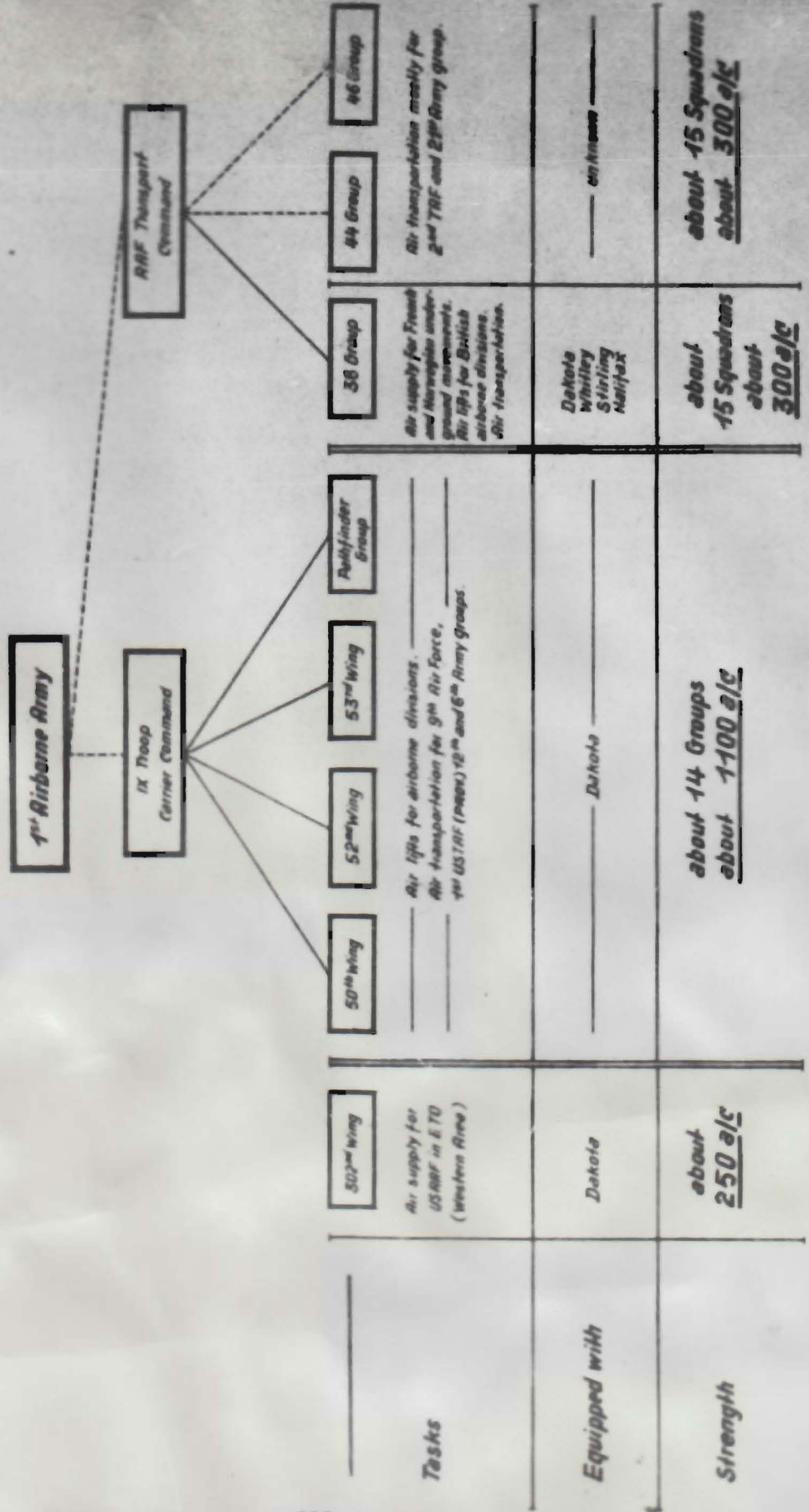
Although operations by IX TCC were always expected from a study of its order of battle and practice traffic, and although the monitoring of this traffic was organized with an eye toward giving warning of these operations, the Luftwaffe SIS was unable to predict a single one of the above-named operations.

Figure No 6

Allied Air Transport Units

Organization and Strength

As of March 1945



TOP SECRET

During the airborne operation over Normandy it was for a long time not clear which units had towed the gliders, and which had dropped the paratroopers. On the basis of a few fragmentary indications from W/F R/T, it was first thought that this operation was being carried out by the 8th Air Force. PWI was the first source to shed any light on the matter. SIS had no basis from which to draw any conclusions. The same picture presented itself during the airborne invasion of Holland, and in the supply-dropping operation over Bastogne for the surrounded American ground forces. In the latter case, the only way the participating units were identified was from the aircraft's course home, and the W/T traffic of the Wing Hqs.

The approach flight of the IX TOC aircraft in the Bocholt operation was likewise impossible to pick up. In this case the approaching formations were betrayed by the American Air Raid Warning station in France, which transmitted radar plots.

After SIS had failed to give any indication of the airborne operations in Normandy, the coverage was recognized. A special company was formed for monitoring the Allied air transport units. But as subsequent operations showed, this specialization brought no great success. The only change was that tactical evaluation got better material from which to estimate airfield occupation and the principal routes flown. Immediate evaluation during combat operations, such as flight path tracking, advance knowledge of targets, etc., was at no time possible. The reasons for this

TOP SECRET

TOP SECRET

failure were, on the one hand, the good radio discipline of the transport units, but, on the other, probably the fact that female personnel had been largely assigned to this coverage. The Luftwaffe women auxiliaries were well suited to the work of intercepting point-to-point traffic with a good signal strength. However, they were definitely not adequate to handle the difficulties of monitoring air-to-ground traffic. As the airborne transmitters had a lower signal strength and generally were not exactly on frequency, it was necessary to make constant adjustments to receive the traffic, to which the women could never accustom themselves.

When the German SIS proved unable to furnish information on the airborne supply-dropping operation at Bastogne, the Luftwaffe Command subjected SIS to harsh criticism. The company commander of the intercept company involved was, as the officer responsible, made to answer this criticism.

Since the Signal Intelligence Service was unable to furnish satisfactory results, efforts were increased to find some way of recognizing the approach of transport aircraft by radar intercept (monitoring Eureka-Rebecca, etc). These efforts were also without any success. Still, the preparation for the last great operation Bocholt, was spotted. By close cooperation between the SIS of the Luftwaffe and Army and from photo reconnaissance, the following was established:

aa) The first indication of a planned operation was the move of the 52nd and 53rd Wings from the UK to France;

TOP SECRET

TOP SECRET

bb) At the same time the Army SIS picked up a military police message which revealed that both of the known airborne divisions, the 82nd and 101st had been pulled out of operations at the front, and had been prepared for a new operation in the rear areas. One of these divisions was stationed on the military manœuvres reservation at Mourmelon, near Rheims. The MP message referred to read approximately as follows:

(
X
THE ROAD FROM MOURMELON TO RHEIMS IS TO BE BLOCKED TO ALL TRAFFIC TOMORROW MORNING EARLY BECAUSE THE 82ND AIRBORNE DIVISION WILL BE MOVING TOWARDS MOURMELON WITH APPROXIMATELY 1000 VEHICLES.")

- cc) Photo reconnaissance revealed that the Mourmelon manœuvres area had about 1500 tents, and was covered with gliders and aircraft.
- dd) About fourteen days before the Bocholt operation, the radio traffic of the transport aircraft fell off noticeably. The transmitters at Wing Hq. maintained a strange radio silence for days on end. It was assumed that part of the transport units for the intended airborne operation were being prepared, or transferred.
- ee) The planned dropping area for the airborne mission, which had to be in the direction of the planned offensive, was not difficult to ascertain from the concentration of Allied tactical reconnaissance activity. This indicated that the Lower Rhine

TOP SECRET

TOP SECRET

area and the Frankfurt/Main region were the targets. After Bocholt, a similar operation was anticipated in the Frankfurt area.

c) Air Transport Operations.

In contrast to the strict radio discipline imposed during combat operations, the radio traffic on the ordinary transport runs in the UK or on the Continent, was lively. There were many clear-text messages, and messages in bomber code. The following represents some of the intelligence gleaned from the coverage of these transport operations.

- aa) Knowledge of the air routes most frequently flown, and the principal air bases;
- bb) Location of supply centers;
- cc) Occupation of airfields.

When the weather was bad, transport flights ceased almost entirely, and resumed as soon as the weather permitted. It was known from intercepted messages and captured documents that, on transport flights, generally the leading aircraft only engaged in any radio traffic. Despite this, on days of heavy traffic, often over 300 aircraft of the IX TOC were heard.

2. 302nd Wing.

a) General.

In addition to the IX Troop Carrier Command there was still another American transport outfit in the ETO, namely the 302nd Wing. The duties of the two units differed as follows:

TOP SECRET

TOP SECRET

IX TOC----- Used in airborne operations, supply-dropping for ground force units at the front and air transport of supplies for 12th and 6th Army Groups.

302nd Wing----- Air transport for the American air force units operating in Western Europe (UK and France), carrying personnel and material.

The IX TOC belonged to AEAF, and was a combat unit. The 302nd Wing was subordinate to the U.S. Air Transport Command, and was purely a supply unit. It was divided into three groups, and had about 250 aircraft, mostly C-47's.

b) Transport Flights.

The 302nd Wing carried out transport flights between the depot air bases (such as Prestwick in Scotland) and the supply depots of 8th and 9th Air Forces and 1st USTAF. Radio traffic on these missions was unrestricted. The German SIS monitored this traffic very thoroughly, and the following information extracted:

- aa) By statistical notation of the individual flights it was possible to get a clear picture of which units received unusual quantities of supplies. For example, before the great offensive in the Spring of 1945, the 8th Air Force disappeared from the supply picture entirely, to the advantage of 9th Air Force and 1st USTAF;
- bb) Many times, the pilots of the transport aircraft revealed their destination by calling the field at which they intended to land.

TOP SECRET

TOP SECRET

At the same time they often made mention of the load they carried. For example, if they were carrying pilots, they would send a clear-text message: "WE HAVE 10 P-38 PILOTS ON BOARD". Since these messages came rather often, it was possible to draw conclusions as to what type of aircraft were being sent over in large numbers by boat. In this way the prospective commitment of a new type of aircraft, such as the "Invader", was known long before the first one appeared in combat.

cc) Many other details, such as important personages on board, locations of units, etc. were also learned from these clear-text messages.

3. 38 Group, RAF.

a) Organization.

Up until the organization of the 2nd Tactical Air Force, the then 38 Wing was assigned to the Army Cooperation Command. The use of call-signs revealed that the unit, meanwhile enlarged to a group, no longer belonged to TAF and was assigned elsewhere. The radio traffic did not betray the new assignment. On the basis of information from another source, it was assumed that 38 Group was assigned to the British Transport Command, and was to work with the 1st Airborne Army.

When the IX Bomber Command of 9th Air Force moved from the area northwest of London, to France, the 38 Group, up to that time stationed in Netheravon, took over the airfields thus made available. The headquarters was found by D/F to be in the Earls Colne area.

TOP SECRET

TOP SECRET

The purpose of the move was, presumably, an attempt to shorten the air route of supply aircraft of 38 Group to the area of operations of the British 21st Army Group in Holland and Belgium.

b) Operations.

Monitoring the air-to-ground traffic of 38 Group brought notably small results. Only rarely was it possible to pick up supply-dropping operations for French and Norwegian resistance movements, which were the principal duty of this group. Operations on the front during large-scale airborne undertakings were monitored as unsuccessfully as those of IX TCC. Practice traffic over UK, and the regular traffic in the course of transport operations, enabled German SIS to estimate the approximate strength of the group, and the extent to which airfields were occupied.

4. 44 and 46 Groups, RAF.

Radio traffic of 44 and 46 Groups gave even less complete information to SIS than did 38 Group. Organization and assignment could not be clarified because radio networks of the RAF Transport Command and subordinate units were never discovered. Airfields used, and approximate strength were determined from the radio traffic of the aircraft which made the run between the UK and 21st Army Group area. It could also be established where most of the supplies were going (Brussels), and it was known that many wounded were often transported on the return flight.

TOP SECRET

TOP SECRET

REPORT IN BRIEF ON THE U. S. AIR TRANSPORT SERVICE

General Observations

The course of military events during the war called for an exhaustive monitoring of the U.S. Army Air Forces. Up to the time of the war, there had been no foundation material in the hands of the Luftwaffe to enable intelligence gathering by SIS methods, and no basis for foretelling the manner in which the U.S. Army Air Forces was to extend itself across the Atlantic, in what quantities it would undertake the transporting of personnel and materiel, and whether or not aircraft destined for tactical employment in the Theater of War would be brought over from the Zone of the Interior by air.

A. Routes flown by Air Transport.

After the USA entered the war, monitoring observations indicated that there were three routes taken by the transport and ferry traffic across the Atlantic which had to be covered. Not until later were direct non-stop flights from North America to England noted.

1. The Supply route: USA- Iceland - England (Northern Route)

The greatest number of transatlantic flights were observed between March-April and September. By monitoring the transmissions of the AACCS stations at St. John's, Newfoundland, Frederiksdal, Greenland, Reykjavik, Iceland, and Prestwick, Scotland and compiling all the aircraft call-signs which turned up in that traffic, strength in numbers could be estimated (often as many as 100 aircraft in a day), and preparations for flights about to be made were most particularly clearly indicated.

This coverage was taken over by another SIS station.

2. The Supply Route: USA - Bermuda - Azores - England (Middle Route)

The first information was obtained on the flights of Clipper planes between October and December, 1941. This provided the basis for monitoring of additional commercial U.S. air traffic, and subsequently for following the movements of the Army Air Forces. (From January to March, 1942, this coverage was dropped.)

The nature of the radio communications emanating from the AACCS station involved revealed right away whether the airborne aircraft were on a practice flight or a mission, specifically from the reports dispatched or from questions asked both ways concerning time, location, number of crew members or passengers, orders for meals, etc. During the initial period, it was only occasionally possible to pick out the escort or mother ship which did the navigating for the whole flight. However, after the British occupied the Azores and set up their own service stations with safety service radio facilities, the use of escort planes could be spotted every time. Despite the enforcement of radio

TOP SECRET

silence, instructions passed between radio operators just after take-off and just before landing between England and the Azores made it possible to log the flight. This provided statistics on the quantity of supply transport planes and escort planes coming over, which could be compared with the daily progress in the movement of the 5th(?) Air Force to England as an index of preparation for ground or air offensives.

After the air bases had been set up in North Africa (Casablanca and Marrakech), escort planes, supply transports and courier planes flew from the USA to North Africa by way of the Azores. The take-off and landing traffic as well as the advance instructions from the air bases Casablanca and Marrakech revealed the operations of the aircraft, and whether their crews were headed for the UK or Italy.

3. Supply Route: USA - Trinidad - Brazil - Ascension - West Africa (the Southern Route).

The accentuated monitoring of AACS traffic (aircraft movement reports) which took place in March and April 1942 provided an almost complete picture of the construction and expansion of air bases along the East coast of the USA, Central and South America, as well as in Africa, Asia Minor, and India. Intercepted messages revealed that the air routes were first flown by certain 4-motored clipper planes. The extent to which the two commercial airlines were fulfilling the requirements of the military or were being used as part of a cover plan could be estimated from intercepted telegrams and the exchange reports between the different ground installations. In this way, the development, militarizing, and expansion of the air route and its component legs could be accurately followed. Pan American Airways conducted experimental flights and actual operations from Miami. Then well-trained crews of military personnel took over (radio operators, etc.) This air route, along the east coast of America crossing the Atlantic between Brazil and West Africa, had to be accorded a high degree of importance, because it was considered the principal air supply route for all theaters of war. **

The number of flights by transport and escort planes was therefore quite considerable. Frequently as many as 100 aircraft daily were picked up and identified from take-off and landing reports.

The construction of AACS stations and the expansion of air bases undertaken even before entry into the war, (as well as the experimental operations) denoted an intelligent and professional direction of the air service, and at the same time an extension of North American commercial airways through Central and South America. This was especially true of Brazil, Venezuela, Bolivia, Peru, and Ecuador. The squeezing out of other commercial airlines such as the Condor Syndicate could clearly be seen. It is not known how far the diplomatic relations between North America, and Great Britain, Holland, France and the small states of Central America governed the freedom of air bases and the right to fly over their territory before the US

TOP SECRET

TOP SECRET

entered the war. Nevertheless, the operations of Pan American Airways stood out clearly as the executive arm of American Air Foreign policy, and by painstaking intercept coverage of the entire air facilities communication network, the air supply routes to Europe and Africa with all component legs, could be established beyond doubt.

After the USA entered the war, the main obstacles had been already so nearly completely overcome and the experiments were so far along that the further expansion and development could be pursued with increased vigor. At this point the USA commenced building its own radio facilities stations. Lagos, Akkra, Kano, Geneina, Khartoum and Cairo became major and secondary stations. Lagos (British Nigeria) became the main base on the African continent, and Belem (Brazil) on the American continent for the transatlantic route. Khartoum (British Egyptian Sudan) became the central station for the flights beyond to Cairo (Egypt) Teheran (Iran), and on to Karachi or Delhi, India. Occasional flights by way of Brazaville (French Central Africa) to Leopoldville (Belgian Congo) had no special importance, for shipments for the Union of South Africa could be sent on from Khartoum to the Egyptian Front on British Transport aircraft (Route: Durban - Khartoum - Cairo).

After the American occupation of North Africa, Dakar (French West Africa), Casablanca, Marrakech (Morocco), Oran, Algiers, and Tunis came to the fore as major air bases. Bathurst (Liberia) had already been built up considerably and served as an emergency landing field and supply depot. (Among other things, the materials for the construction of the air base at Dakar appeared to have been shipped over before the taking of North Africa, by air and water transport, from the fragmentary texts of intercepted telegrams.)

Consolidation of the legs and spurs give the following composite picture of the air routes:

Miami - Havana - Porto Rico - Trinidad - Georgetown - Paramaribo - Para - Natal/Belem - Ascencion (only for servicing and emergency landing) - Lagos or Dakar. From Lagos on by way of Kano - Geneina - Khartoum (Khartoum - Cairo) - (Khartoum - Aden - Karachi - Delhi, Khartoum - Aden - Teheran, or Dakar - Tinduf - Marrakech (to England) - Oran - Algiers - Tunis.) (supply channel for the expansion of the 15th Air Force)).

The large quantity of intercepted telegrams in clear text regularly revealed the flights of transport and escort planes as far as Lagos or Dakar, as well as the return journeys with the ferrying crews, especially in the aircraft movement reports. In addition, the air-to-ground traffic intercepted served as a basis for comparison, as it included the aircraft call-signs. (From March 20, 1944 on, the overall evaluation was carried out at OKL, Chi Referat B 5)

TOP SECRET

TOP SECRETB. Radio TrafficGeneral Observations:

American radio stations were ordered covered in October - December 1941, at the intercept station. Since there were no data or any kind of indications on hand to work with, the principal task at first was to pick out not only military but also civilian radio stations engaged in international or Zone of the Interior traffic. The Clipper radio service working with the Portuguese seaplane base radio stations of Horta (Azores) and Lisbon gave indications not only of the increased volume of experimental and transatlantic air traffic and increased use of commercial aircraft, but also basic information on organization and personnel of the US Army Air Forces. Thus, on the basis of the frequencies in actual use, it could be determined which frequencies were to be watched for. At first, it was simply a question of civilian transmitting installations working for the weather service, and sending out take-off and landing reports for the aircraft movement reporting service, but their camouflage was penetrated because it was known that the Pan American Airways accounted for the entire supply transport organization. (experiments, know-how, etc.) For an interim period (Jan - April 1942), the coverage was dropped. After this the coverage was resumed in concentrated and unremitting fashion, and continually improved. Air Force units were spotted in the Caribbean area and in the Galapagos Islands. Also, the Navy Radio station "summit" (Panama) which broadcast warnings of U-boats, etc. The Naval Communications service (wtL/wtf) which served the escort planes flying navigation in the Caribbean area and along the entire east coast as far as Belem, could be continuously picked up in ground-to-air traffic and aircraft movement reporting. ***

The erection of AACCS stations on the American and African continents with US call-signs and well-trained personnel (up to 150 letters/min.) made the assigned intercept jobs that much easier, as this marked off the radio range pathways and areas, and the stations with good signal strength could always be covered despite the high sending speed.

The experiments in long-range communication made by the Clipper plane KOF or KOG(?) on Lake Victoria in Africa, which made contact with the mother country (New York) and other remote stations were particularly interesting. The aircraft would give notice of its landings on water by a position report sent in the clear.

The signal strength of these stations was good until the summer of 1944. Due to unknown causes, the signal strength faded steadily, so much so that toward the end of the war, stations across the water could hardly be picked up any more. (influence of sun spots?)

- * German author's error -- should read 8th Air Force
- ** Lack of mention of operation Bolero (editor's comment).
- *** Original German sentence '4 unintelligible, probably refers to Coast Guard installations.

TOP SECRET